REMARKS

Claims 92-108 are pending in this application. Claim 92 has been amended. No new matter has been introduced.

Claim 92 stands rejected under 35 U.S.C. § 112, second paragraph, as being indefinite "for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention." (Office Action at 2). Applicant notes that independent claim 92 has been amended to correct any perceived indefiniteness. Applicant submits all pending claims are in full compliance with 35 U.S.C. § 112.

Claims 92, 97-101 and 106 stand rejected under 35 U.S.C. 102(b) as being anticipated by Wang et al., U.S. Patent No. 6,074,959 ("Wang"). This rejection is respectfully traversed.

The claimed invention relates to the fabrication of integrated circuit devices and, in particular, to a method of controlling striations and CD loss in the integrated circuit during an etching process. Amended independent claim 92 recites a "method for etching an oxide layer of a substrate" by *inter alia* "placing a substrate having an oxide layer formed over said substrate into a reactive chamber; introducing an etching gas into said reactive chamber; generating a plasma of said etching gas at a first power level" and "contacting said oxide layer of said substrate with said first power level plasma for a first predetermined time." Amended independent claim 92 also recites "generating a plasma of said etching gas at a second power level in said chamber and contacting said oxide layer of said substrate with said second power level plasma for a second predetermined time to etch said oxide layer, wherein said first and second power levels are different."

Wang relates to a plasma etch process "particularly applicable to a self-aligned contact etch or other advanced structures requiring high-selectivity to nitride or other non-oxide materials and no etch stop." (Abstract). Specifically, Wang relates to a plasma etch process using a "two-step process." (Col. 11, line 11). Wang teaches that "[t]he first step is based on C_3F_6, the second step on $C_3H_2F_6$. The first step is intended to quickly etch

deep into the oxide with a vertical profile but without exposing the nitride. As a result no selectively to nitride is required. The second step exposes the nitride and requires a high selectivity to nitride" and, therefore, uses $C_3H_2F_6$. (Col. 11, lines 12-20).

Wang fails to teach or suggest a method for etching an oxide layer of a substrate by, *inter alia*, "introducing an etching gas into said reactive chamber; generating a plasma of said etching gas at a first power level" and "generating a plasma of *said etching gas* at a second power level in said chamber," as amended independent claim 92 recites (emphasis added). Wang teaches a two-step process in which each step has a different gas introduced into the reactive chamber. (Col. 11, lines 12-20). Indeed, in all three tables cited by the Office Action, Wang teaches the use of two different gases for each step. For example, in Table 2, Wang discloses a method in which the flow of C_3F_6 is 24 sccm and 0 sccm for $C_3H_2F_6$ during Step 1; and in Step 2, Wang teaches a flow of 0 sccm for C_3F_6, and 30 sccm for $C_3H_2F_6$. Therefore, Wang fails to teach each and every limitation of amended independent claim 92, and withdrawal of the rejection of claims 92, 97-101 and 106 is respectfully requested.

Claims 93-96 stand rejected under 35 U.S.C. § 103(a) as being unpatentable over Wang in view of Jain et al, U.S. Patent No. 6,180,533 ("Jain"). The rejection is respectfully traversed.

Jain relates to a method of plasma etching a trench having rounded top corners in a silicon substrate. (Abstract). According to one embodiment, Jain uses a two-step method including a "break-through" step and a subsequent etch step. (Col. 4, lines 34-35).

The subject matter of claims 93-96 would not have been obvious over Wang in view of Jain. Not all limitations of amended independent claim 92 are taught or suggested by the prior art, whether considered alone or in combination. As discussed above, Wang fails to teach or suggest a method for etching an oxide layer comprising "introducing an etching gas into [a] reactive chamber," "generating a plasma of said etching gas at a first power level" and "generating a plasma of said etching gas at a second power level," as

amended independent claim 92 recites. Jain also discloses a method in which two different gases are used for each step. According to Jain, the first step is a "break-through" step, using CF_4, CHF_3, CH_2F_2, CH_3F, and combinations thereof. "Subsequent to the break-through step, a trench is etched to a desired depth in the silicon substrate, using a *different* plasma feed gas composition." (Col. 4, lines 43-45) (emphasis added). Therefore, neither Wang nor Jain, whether considered alone or in combination, teach or suggest all claim limitations of amended independent claim 92. Applicant respectfully requests withdrawal of the rejection of claims 93-96.

Claims 102-104 stand rejected under 35 U.S.C. § 103(a) as being unpatentable over Wang in view of Stinnett et al., U.S. Patent No. 6,355,557 ("Stinnett"). The rejection is respectfully traversed.

Stinnett relates to a plasma etching process with a controlled wineglass shape. Stinnett teaches a method of etching a bowl by "first etching an anisotropic hole through a mask aperture, and then isotropically etching through the same mask aperture." (Abstract).

The subject matter of claims 102-104 would not have been obvious over Wang in view of Stinnett. Not all limitations of amended independent claim 92 are taught or suggested by the cited references, whether considered alone or in combination. As discussed above with respect to amended independent claim 92, Wang fails to teach or suggest a method for etching an oxide layer comprising "generating a plasma of said etching gas at a first power level" and "generating a plasma of said etching gas at a second power level." Stinnett discloses a two-step method according to which a first gas composition is used in a first step, and a second gas composition is used in a second step. For example, in Table 1 of Stinnett, the gases used in the first step comprise of CF_4, CH_3, and Ar; in Table 2, the gases used in the second step comprise of CF_4, NF_3, and O_2. Therefore, neither Wang nor Stinnett, whether considered alone or in combination, teach or suggest all claim limitations of amended independent claim 92. Applicant respectfully requests withdrawal of the rejection of claims 102-104.

Claims 102-105 stand rejected under 35 U.S.C. § 103(a) as being unpatentable over Wang in view of Yang et al, U.S. Patent No. 6,426,016 ("Yang"). The rejection is respectfully traversed.

Yang relates to a method for etching passivation layers and an antireflective layer on a substrate by *inter alia* "etching the silicon nitride layer in a first etching chamber" and etching the silicon oxide layer in a second etching chamber." (Abstract).

The subject matter of claims 102-105 would not have been obvious over Wang in view of Yang. Not all limitations of amended independent claim 92 are taught or suggested by the cited references, whether considered alone or in combination. As discussed above with respect to amended independent claim 92, Wang fails to teach or suggest a method for etching an oxide layer comprising "generating a plasma of said etching gas at a first power level" and "generating a plasma of said etching gas at a second power level." Yang discloses a two-step method of etching in which two gases are used separately in respective etching steps. For example, in Step 1 of Yang, a first gas composition is used (CF_4 and O_2). (Col. 4, lines 53-55). In Step 2, a second gas composition is used (CHF_3, CF_4, Ar, and He). (Col. 5, line 9). Therefore, neither Wang nor Yang, whether considered alone or in combination, teach or suggest all claim limitations of amended independent claim 92. Applicant respectfully requests withdrawal of the rejection of claims 102-105.

Claims 107-108 stand rejected under 35 U.S.C. § 103(a) as being unpatentable over Wang in view of Yamazaki et al, U.S. Patent No. 6,489,632 ("Yamazaki"). The rejection is respectfully traversed.

Yamazaki relates to a method for fabricating a semiconductor device having impurity regions selectively formed on a semiconductor substrate activated by radiating laser beams from above. (Abstract). In etching the semiconductor substrate, Yamazaki uses CF_4 and O_2. (Col. 5, lines 51-52).

The subject matter of claims 107-108 would not have been obvious over Wang in view of Yamazaki. Not all claim limitations of amended independent claim 92 are taught or suggested by the prior art, whether considered alone or in combination. As discussed above with respect to amended independent claim 92, Wang fails to teach or suggest a method for etching an oxide layer comprising "generating a plasma of said etching gas at a first power level" and "generating a plasma of said etching gas at a second power level." Yamazaki discloses a method of forming impurities on a semiconductor substrate such as germanium or gallium arsenide. (Col. 13, lines 48-53). However, Yamazaki fails to teach or suggest "generating a plasma of said etching gas at a first power level" and "generating a plasma of said etching gas at a second power level," as amended independent claim 92 recites. Therefore, neither Wang nor Yamazaki, alone or in combination, teach or suggest all claim limitations of amended independent claim 92. Applicant respectfully requests withdrawal of the rejection of claims 107-108.

A marked-up version of the changes made to the claims by the current amendment is attached. The attached page is captioned "**Version with markings to show changes made.**"

In view of the above, each of the presently pending claims in this application is believed to be in immediate condition for allowance. Accordingly, the Examiner is respectfully requested to withdraw the outstanding rejection of the claims and to pass this application to issue.

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Respectfully submitted,

By_____

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Version With Markings to Show Changes Made

92. (new) A method for etching an oxide layer of a substrate, comprising:

placing a substrate having an oxide layer formed over said substrate into a reactive chamber;

introducing an etching gas into said reactive chamber;

generating a plasma of said etching gas at a first power level and contacting said oxide layer of said substrate with said first power level plasma for a first predetermined time; and

generating a plasma of said etching gas at a second power level in said reactive chamber and contacting said oxide layer of said substrate with said second power level plasma for a second predetermined time to etch said oxide layer, wherein said first and second power levels are different.